REMARKS

Claims 5, 15-18, 20, 22 and 23 are pending in the present application and are rejected. Claim 5 is herein amended. Claims 15, 16, 18, 20 and 23 are herein cancelled without prejudice. New claims 24-33 are added herein. No new matter has been added. Applicant thanks the Examiner for the courtesies extended in the telephone interview of April 14, 2010. Applicant's Statement of the Summary of the Interview is incorporated herein.

Sequence Rules Compliance

The Office Action objects to the specification on the grounds that page 9 contains sequences without SEQ ID NOs. However, these sequences correspond to SEQ ID NOs 1-6. Therefore, Applicant herein amends the specification to refer to these SEQ ID NOs. Favorable reconsideration is respectfully requested.

Applicant's Response to Claim Rejections under 35 U.S.C. §112

Claims 5, 15-18, 20, 22 and 23 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is the position of the Office Action that the claims omit essential elements. In particular, the Office Action indicates that "a recitation of the correlation between the degree of expression of the recited gene and the likelihood of having colon cancer" is missing. The Office Action cites to *Griffin v. Bertina* as an example of how to recite the missing subject matter. The

Office Action states that a "wherein" clause similar to that in *Griffin v. Bertina* would obviate the rejection.

In response, as discussed in the telephone interview, Applicant herein amends claim 5 to recite the step of "determining that the person has colon cancer if COX-2 is expressed in the amplified cDNA." Applicant submits that this "determining" step is sufficient to overcome the pending rejection. Favorable reconsideration is respectfully requested.

Claims 5, 15-18, 20, 22 and 23 are rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement.

It is the position of the Office Action that the specification, while being enabling for a method of "confirming a diagnosis of colon cancer in a human patient" based solely on the detection of COX-2 gene expression, does not reasonably provide enablement for absolute detection of colon cancer in any species based solely on the detection of the COX-2 gene expression of any degree.

First, Applicant herein amends the claims in order to recite "a person." As discussed in the telephone interview, a large part of the enablement rejection relies on the fact that the claims are broad enough to recite the method applied to non-human species, but that non-human species are allegedly not enabled. Applicant respectfully submits that the amendment to recite "a person" obviates this aspect of the enablement rejection.

The Office Action refers to three references. First, the Office Action discusses Murphy et al. Murphy is critical of microarray techniques which "clusters genes according to their expression behavior under assigned conditions and to assign function." However, Applicant

respectfully submits that the specification does not rely upon microarray data. The claims do not recite that colon cancer is detected when a *cluster* of genes are expressed. Rather, the claims recite that colon cancer is detected when the COX-2 gene is expressed. Thus, Murphy is not relevant.

Next, the Office Action discusses Lucentini et al. Lucentini states that a case where "follow-up studies overturn an initial finding of a gene-disease association are strikingly common." However, Applicant respectfully submits that Lucentini is discussing a gene-disease *risk* association, not a gene-disease *occurrence* association. See the first paragraph on page 3 of the printout.

Finally, the Office Action discusses Grigoryev et al. Grigoryev appears to disclose that gene expression between humans, mice and rats may be inconsistent at times. In response, Applicant respectfully submits that since the claims are herein amended to recite detection of colon cancer in "a person" rather than non-human species, the disclosure of Grigoryev is irrelevant. Additionally, Applicant submits that the present claims relate to humans, and are based on data from humans.

As to Murphy, Lucentini and Grigoryev, Applicant respectfully submits that the comments of the Office Action merely provide general criticism of gene association studies and do not relate to COX-2 and colon cancer specification. As such, Applicant respectfully submits that these references are insufficient to establish the alleged non-enablement of the claimed subject matter.

On pages 8 and 9, the Office Action discusses the data in the specification. In particular, the Office Action states that COX-2 expression was not detected in 100% of colon cancer

patients. In response, Applicant briefly explains the data from both the specification and the previously-filed Declaration. The data is summarized in the Declaration attached hereto.

Applicant first notes that it is accurate to state that in the specification, only 27 of the 30 colon cancer patients had COX-2 expression. Similarly, in the larger sample size of the Declaration filed April 29, 2009, only 60 of the 70 colon cancer patients had COX-2 expression. However, in the data of the specification, all 27 of patients having COX-2 expression had colon cancer (100% positive predictive value). Similarly, in the data of the Declaration, all 60 patients having COX-2 expression had colon cancer (100% positive predictive value). Therefore, Applicant submits that the statistical data proves that the claimed subject matter is enabled.

Furthermore, the Office Action states that there is no data indicating that a patient is confirmed as having colon cancer solely on the basis of COX-2 gene expression, i.e., all patients tested were known to have colon cancer prior to testing. However, Applicant notes that the fact that the diseased or non-diseased state of the patients was confirmed by endoscopy prior to the COX-2 analysis is irrelevant. The presented data would be no different if the COX-2 analysis was performed first, and then the diseased or non-diseased state of the patient was then confirmed by endoscopy. Rather, the point of the data is that there is a reliable correlation between expression of COX-2 and colon cancer. The confirmation by endoscopy was only done to prove the strength of the correlation. The correlation has been shown by the data which indicates a 100% positive predictive value. Therefore, the presence of colon cancer can be determined in humans based solely on whether COX-2 is expressed. Since the data shows a 100% positive predictive value, Applicant respectfully submits that a person skilled in the art can perform the claimed method of detecting colon cancer based solely on COX-2 expression.

In view of the above, Applicant respectfully submits that the amended claims fully comply with the enablement requirement. Favorable reconsideration is respectfully requested.

"General" claims

Additionally, Applicant herein adds new claims 26-33, which recite a "general" method, without reciting COX-2 or colon cancer.

For at least the foregoing reasons, the claimed invention distinguishes over the cited art and defines patentable subject matter. Favorable reconsideration is earnestly solicited.

If the Examiner deems that any further action by applicant would be desirable to place the application in condition for allowance, the Examiner is encouraged to telephone applicant's undersigned attorney.

If this paper is not timely filed, Applicant respectfully petitions for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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Enclosure: Declaration by Shigeru KANAOKA